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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/520,466

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Hirokatsu Hayashi

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EXAMINER

MARTINEZ, BRITTANY M

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/520,466	<b>Applicant(s)</b> HAYASHI ET AL.	
	<b>Examiner</b> BRITTANY M. MARTINEZ	<b>Art Unit</b> 1793	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☒ Claim(s) 7 and 9-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Application***

Applicant's arguments/remarks and amendments filed on March 12, 2008, have been carefully considered. Upon further consideration of the pending claims, the restriction requirement, filed October 3, 2007, has been withdrawn. **Claims 1-12** are pending in this application, with **Claims 1 and 3-4** amended and **Claims 1-12** examined.

### ***Priority***

1. Applicant's claim for foreign priority in regard to JP 2002-201112, filed July 10, 2002, is acknowledged. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
2. Acknowledgment is made of applicant's claim for foreign priority based JP 2002-201111, filed July 10, 2002. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Objections***

1. **Claims 7 and 9-12** are objected to because of the following informalities: "high pressure homogenizer (**Claim 7**) should be changed to "high-pressure homogenizer" to allow for consistency with the rest of the instant application. An "an" should be placed in

front of “ink-jet” (**Claim 9**). A “the” should be placed in front of “ink-jet” (**Claims 10-12**).

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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4. **Claims 1-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kono et al. (US 6,417,264 B1) in view of Hiroshi (JP9142827).

5. With regard to **Claims 1, 7-8, and 11-12**, Kono discloses an easily dispersible precipitated silica cake, wherein the precipitated silica has a BET specific surface area of  $280 \text{ m}^2/\text{g}$  (Kono, c. 7, l. 15; and Example 5) and wherein ion-exchange water is added to the easily dispersible cake to provide an aqueous dispersion of the silica (Kono, c. 7, l. 16-17), said dispersion being stirred with a propeller mixer to affect a preliminary dispersion (Kono, c. 7, l. 17-19), a resultant slurry being treated to be dispersed with a high-pressure homogenizer once (Kono, c. 5, l. 66-67; c. 6, l. 1-3; Examples 6-9) at a processing pressure of 78 MPa (Kono, c. 5, l. 16-28, 42-48, and 66-67; c. 6, l. 1-3; c. 7, l. 21, 35, and 45; c. 8, l. 54-55; Examples 6-9), and further diluted to reduce the silica concentration to 1.5% by weight, the resultant dispersion having a light-scattering index (n-value) of at least 2 (Kono, "Abstract;" c. 2, l. 18-25; "Table 1;" "Table 2").

6. With regard to **Claim 2**, Kono discloses an easily dispersible precipitated silica cake, having a water content of 85% by weight (Kono, c. 8, l. 31-59).

7. With regard to **Claim 3**, Kono discloses a process for producing an easily dispersible cake of precipitated silica comprising, using water as an initial reaction liquid (Kono, c. 7, l. 4-5), wherein said process comprises adding sodium silicate and sulfuric acid to water (Kono, c. 7, l. 4-6 and 8-11) of which temperature is being maintained at  $95^\circ\text{C}$  (Kono, c. 7, l. 9), whereby forming precipitated silica through their reaction (Kono,

c. 7, l. 11); and separating said precipitated silica from said reaction liquid in wet state (Kono, c. 4, l. 42-47; c. 7, l. 11-12; Example 5).

8. With regard to **Claim 4**, Kono discloses a concentration of silica solid in the reaction mixture at the ending time of the reaction of 15wt% (Kono, c. 7, l. 13).

9. With regard to **Claim 5**, Kono discloses a dispersion of precipitated silica which is characterized by being a dispersion of an easily dispersible cake of precipitated silica as described in **Claim 1** in a polar solvent, the average particle size of the precipitated silica particles present in the dispersion being not greater than 200 nm (Kono, c. 2, l. 8-11 and 59-67; c. 7, l. 16-17; "Table 1"). Kono further discloses the presence of silica particles with an average particle diameter greater than 200 nm negatively affects the effectiveness of the silica dispersion when used as a raw material for a coating liquid for an ink jet sheet. For instance, this larger average particle diameter negatively affects flatness on the surface of the coated layer and light transmission, resulting in an opaque coated layer with insufficient glossiness, and ultimately, an insufficient optical density (Kono, c. 3, l. 42-50).

10. With regard to **Claim 6**, Kono discloses a dispersion of precipitated silica in which a cationic polymer is dispersed (Kono, "Abstract;" c. 1, l. 6-7; c. 2, l. 8-11 and 52-58).

11. With regard to **Claim 7**, Kono further discloses a process for preparing a dispersion of precipitated silica, in which a silica slurry formed by dispersing a cake of precipitated silica in a polar solvent is subjected to a fine pulverization treatment with a

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high pressure homogenizer (Kono, c. 4, l. 66-67; c. 5, l. 16-28, 42-48, and 66-67; c. 6, l. 1-3; c. 7, l. 21-24, 35-36, and 45-46; c. 8, l. 54-55; Examples 6-9).

12. With regard to **Claim 8**, Kono discloses a process for preparing a dispersion of precipitated silica, in which a liquid premixture formed by dispersing a cake of precipitated silica and cationic polymer in a polar solvent is subjected to a fine pulverization treatment with a high pressure homogenizer (Kono, c. 4, l. 66-67; c. 5, l. 16-28, 42-48, and 66-67; c. 6, l. 1-3; c. 7, l. 35-36 and 45-46; c. 8, l. 54-55; Examples 6-9).

13. Kono does not explicitly disclose a silica concentration of 5% by weight in the aqueous dispersion of silica (**Claims 1, 7-8, and 11-12**); pH of the reaction mixture maintained at a fixed value within a range of 7.5-11.5 (**Claim 3**); a silica solid concentration not higher than 50 g/L (**Claim 4**); or the ratio of aggregated particles having a particle size equaling to or more than 500 nm being not higher than 5% by volume (**Claim 5**).

14. With regard to **Claims 1, 7-8, and 11-12**, these claims do not require the limitations following "wherein when" in the 4th line of the claim; rather, these limitations are merely circumstantial. Even so, with regard to **Claims 1, 7-8, and 11-12**, Hiroshi discloses a silica concentration of 5% by weight in the aqueous dispersion of silica (Hiroshi, 0028). Further, with regard to **Claim 1**, the process for producing the composition is held to be obvious, when the reference teaches a product that appears to be the same as, or an obvious variant of, the product set forth in a product-by-process claim although produced by a different process See *In re Marosi*, 710 F.2d 799,

218 USPQ 289 (Fed. Cir. 1983), and *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir.1985). See also MPEP 2113.

15. With regard to **Claim 3**, Hiroshi discloses a pH of the reaction mixture maintained at a fixed value greater than 8 (Hiroshi, 0055).

16. With regard to **Claim 4**, in view of *In re Boesch*, the claimed numerical silica concentration limitation is considered to be a result effective variable and therefore may obviously be predetermined and optimized at the time the invention was made by one having ordinary skill in the art.

17. With regard to **Claim 5**, an expected ratio of aggregated particles having a certain particle size is a result effective variable since one of ordinary skill in the art would expect different properties in the product as such ratio varies. Since the ratio of aggregated particles having a certain particle size is a result effective variable, it is within the ordinary skill of one of ordinary skill in the art to develop a suitable ratio of aggregated particles having a certain particle size. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

18. Thus, it would have been obvious to one of ordinary skill in the art to modify the products and processes of Kono with the process conditions of Hiroshi in order to obtain an exceptionally stable silica dispersion with a reasonable expectation of success (Hiroshi, 0055).



19. **Claims 9-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kono et al. (US 6,417,264 B1) in view of Hiroshi (JP9142827) as applied to **Claim 1** above, and further in view of Ichinose et al. (US 2003/0039808).

20. With regard to **Claim 9**, Kono discloses a raw material for a coating liquid for ink-jet recording sheets (Kono, c. 1, l. 10-12) which is characterized by being obtained by dispersing the easily dispersible cake of precipitated silica of **Claim 1** in a polar solvent (Kono, c. 2, l. 8-11 and 59-67; c. 7, l. 16-17; "Table 1"), and the percent transmission of the raw material for the coating liquid as measured after diluting the same to the silica concentration of 1.5% by weight being at least 20% ("Table 1" and "Table 2").

21. With regard to **Claim 10**, Kono discloses a raw material for a coating liquid for ink-jet recording sheet, which further comprises a cationic polymer (Kono, c. 1, l. 9-12).

22. With regard to **Claim 11**, Kono discloses a process for making a raw material for a coating liquid for ink-jet recording, which is characterized by dispersing a cake of precipitated silica in a polar solvent (Kono, c. 2, l. 8-11 and 59-67; c. 7, l. 16-17; "Table 1").

23. With regard to **Claim 12**, Kono discloses a process for making a raw material for a coating liquid for ink-jet recording sheet, which is characterized by dispersing a cake of precipitated silica and a cationic polymer in a polar solvent (Kono, c. 4, l. 66-67; c. 5, l. 16-28, 42-48, and 66-67; c. 6, l. 1-3; c. 7, l. 35-36 and 45-46; c. 8, l. 54-55; Examples 6-9).

24. The aforementioned applied prior art does not explicitly disclose a binder (**Claims 9 and 11-12**).

25. Ichinose discloses a coating liquid for ink-jet recording sheets and a process of making, comprising dispersing silica, a binder, and a cationic polymer in a polar solvent (Ichinose, "Abstract;" p. 1, 0002; p. 2, 0025-0026; p. 6, 0059-0060).

26. Thus, it would have been obvious to one of ordinary skill in the art to modify the product and process of the aforementioned applied art with the binder of Ichinose in order to obtain an effective coating liquid for ink-jet recording sheets with a reasonable expectation of success (Ichinose, "Abstract;" p. 1, 0002).

### ***Response to Amendments***

Applicant's amendments, filed March 12, 2008, with respect to the Title, Abstract, and Claims have been fully considered and are accepted. The objections to the Title and Abstract, filed December 12, 2007, have been withdrawn.

### ***Response to Arguments***

1. Applicant's arguments with respect to the rejection of **Claims 1-2** under 35 USC § 102(a) as being anticipated by Kono et al. (US 6,417,264 B1) have been fully considered and are partially persuasive. With regard to Applicant's arguments that Kono discloses treatment with a high-pressure homogenizer three times, Examiner respectfully disagrees. A prior art reference is not to be limited to its specific examples. Kono discloses treatment with a high-pressure homogenizer may be carried out 1 to 10 times (Kono, c. 5, l. 66-67; c. 6, l. 1-3). Applicant's arguments with regard to the silica

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concentration of Kono prior to treatment with a high-pressure homogenizer being greater than the 5% of the instant application are persuasive. Therefore, the 35 USC § 102(a) rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made under 35 USC § 103(a) in view of Kono et al. (US 6,417,264 B1) and Hiroshi (JP9142827), as applied above.

### ***Conclusion***

1. No claim is allowed.
2. In general, prior art renders the claimed invention obvious.
3. Applicant is required to provide pinpoint citation to the specification (i.e. page and paragraph number) to support any amendments to the claims in all subsequent communication with the examiner. **No new matter will be allowed.**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRITTANY M. MARTINEZ whose telephone number is (571) 270-3586. The examiner can normally be reached on Monday-Thursday 7:00AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Wayne Langel/  
Primary Examiner, Art Unit 1793

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/Brittany M Martinez/  
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